

ABSTRACT OF THE INVENTION

The present invention relates a diffraction grating element capable achieving a large angular dispersion and excellent diffraction characteristics.

5 The diffraction grating element has a buried structure, and comprises: a first medium with a refractive index of  $n_1$ ; a second medium with lower refractive index of  $n_2$  than the first medium; and a diffraction grating formed at the interface between the first and second

10 mediums. One of the first and second mediums is a solid, and the other thereof is a solid or a liquid.

An anti-reflection film is formed on one surface of the first medium 11 on which the diffraction grating is not formed, and this anti-reflection film lies in contact

15 with a medium with a refractive index  $n_0$ . Furthermore, an anti-reflection film is also formed on one surface of the second medium on which the diffraction grating is not formed, and this anti-reflection film lies in contact with the medium with the refractive index  $n_0$ .

20 The relationship of the magnitudes of the refractive indices of these respective mediums is " $n_1 > n_2 > n_0$ ".

The parameters of the diffraction grating lie within predetermined ranges.